

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 2420-300626	FOR FURTHER ACTION		See item 4 below
International application No. PCT/RU2005/000366	International filing date (day/month/year) 01 July 2005 (01.07.2005)	Priority date (day/month/year)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant INTEL CORPORATION			

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).
2. This REPORT consists of a total of 7 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

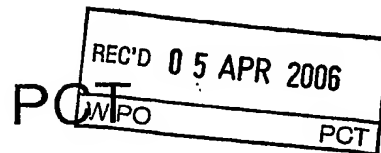
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|--|---|
| <input checked="" type="checkbox"/> Box No. I | Basis of the report |
| <input checked="" type="checkbox"/> Box No. II | Priority |
| <input type="checkbox"/> Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> Box No. VI | Certain documents cited |
| <input type="checkbox"/> Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> Box No. VIII | Certain observations on the international application |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70		Date of issuance of this report 09 January 2008 (09.01.2008) Authorized officer Beate Giffo-Schmitt e-mail: pt03.pct@wipo.int
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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY



To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/RU2005/000366

International filing date (day/month/year)
01.07.2005

Priority date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC
INV. H04L27/26

Applicant
INTEL CORPORATION

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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Tel. +49 30 25901 - 0
Fax: +49 30 25901 - 840

Authorized Officer

Farese, L

Telephone No. +49 30 25901-467



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/RU2005/000366

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. II Priority

1. ☒ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.
2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/RU2005/000366

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-17
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-17
Industrial applicability (IA)	Yes: Claims	1-17
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: US-A-5 479 447 (CHOW ET AL) 26 December 1995 (1995-12-26)

D2: US-A-4 679 227 (HUGHES-HARTOGS ET AL) 7 July 1987 (1987-07-07)

2. The application does not meet the requirements of Article 6 PCT, because the following claims are not clear.

- 2.1 Claim 1 refers to an undisclosed broad function $g(\alpha_n)$. However, the description provides only for the function $\log(\alpha_n^2)$. This generalisation is therefore unallowable.

- 2.2 Claim 1 between lines 11 and 16 contains the step of updating the cost value. It is objected that this step, at least in the present formulation of claim 1, does not provide any contribute to the method of bit loading claimed in line 1. In detail, this step acquires an useful meaning only when it is followed by a step of bit loading, which exploits the new cost values.

- 2.3 Claim 5 contains a further reference to the undisclosed function $g(\alpha_n)$.

- 2.4 Claims 12, 13 and 17 do not relate to device means.

- 2.5 It is not clear if the features of claim 16 are in addition or in substitution of those of claim 15.

3. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-17 does not involve an inventive step in the sense of Article 33(3) PCT.

- 3.1 The document D2 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document):

a method of performing bit loading in a multicarrier communication system comprising:
obtaining transmission coefficients α_n for subchannels of a multicarrier channel, where n is a subchannel index (col. 11, (2));
calculating initial cost values for said subchannels using said transmission coefficients (col. 11, (2));
identifying a subchannel n having a lowest cost value ((col. 10, line 66-col. 11, line 3);
allocating a new bit to said identified subchannel n , (col. 11,(6)) and

~~updating said cost value of said identified subchannel n , after allocating a new bit, using a cost function~~

$$\Delta P_n = f(C_n) - g(\alpha_n)$$

~~where C_n is a number of bits allocated to a subchannel n , $f(C_n)$ is a function of C_n that returns a baseline cost value for allocating an additional bit to subchannel n , and $g(\alpha_n)$ is a function of transmission coefficient α_n~~

- 3.2 The subject-matter of claim 1 therefore differs from this known D2 in that: D2 does not explicitly provide for a cost function $\Delta P_n = f(C_n) - \log(\alpha_n^2)$. However, it is noted that the disclosure in col. 11- line 66-col. 12, line 48 provides for a function which is considered equivalent to the cost function claimed, therefore depriving claim 1 from an inventive contribute.
4. The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claim 11 whenever considering that the use of LUTs instead of processing steps is a common design in the field of signal processing.
5. All the dependent claims do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, see documents D1/D2 and the

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

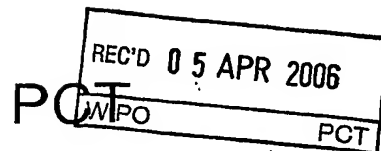
PCT/RU2005/000366

corresponding passages cited in the search report.

6. It is noted, in addition, that the term "multicarriers" in the present set of claim underlines the feature of "OFDM multicarriers", which is disclosed by D2. The citation Y-Y in the search report is therefore to be interpreted under these circumstances.

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Authorized Officer

Farese, L
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INTERNATIONAL SEARCHING AUTHORITY**

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PCT/RU2005/000366

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see separate sheet

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~~where C_n is a number of bits allocated to a subchannel n , $f(C_n)$ is a function of C_n that returns a baseline cost value for allocating an additional bit to subchannel n , and $g(\alpha_n)$ is a function of transmission coefficient α_n .~~

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